

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

D. Remarks

5 Applicant's claim 1 invention includes a trench element separation region an oxide film formed on the inner walls of the trench and trench filling insulating material having edges above inner walls of the trench. Inner wall edges in a top section of the trench and edges of the trench filling insulating material are formed to be essentially located on the same plane when viewed in cross section. Further, the edges of the trench filling material are defined by direct contact with side edges of a sacrificial layer formed by a pullback etching process including a neutral radical performed for the trench filling process.

10 The cited reference *Ishitsuka et al.* does not show a trench filling material with edges defined by direct contact with side edges of a sacrificial layer. *Ishitsuka et al.*, in FIG. 40, shows an element isolation structure with a silicon nitride film (3) (argued to correspond to Applicant's sacrificial layer) and embedded silicon oxide film (7) (argued to correspond to Applicant's "trench filling insulating material"). As shown by FIG. 40, the edge of embedded silicon oxide 15 film (7) above groove (4) is not defined by direct contact with side edges of silicon nitride film (3).

20 Applicant's new claim 21 recites a particular structure for the oxide film of claim 1. The oxide film terminates beyond the edges of the trench filling insulating material above the inner walls. In contrast, the oxide film does not appear to terminate at all.

25 Applicant's new claim 22, recites a semiconductor device isolation structure that includes a trench, a liner oxide film formed on the inner walls of the trench, and a trench filling insulating material within the trench. The trench filling insulating material has a liner oxide film defined edge within the trench, and a neutral radical pullback etch defined edge above the trench that is aligned with the edges of the trench when viewed in cross section.

30 Claim 22 presents clear structural claim language, well supported the Specification. In particular, a neutral radical pullback etch defined edge recites a physical structure having properties defined by the Specification. Dependent claims 23-25 add additional features believed to be patentable over the previously cited references.

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Claims 1 and 7 have been amended. Claims 21-25 are newly added claims.

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Respectfully Submitted,



January 28, 2004

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